California Integrated Waste Management Board

Board Meeting

February 15-16, 2005

AGENDA ITEM 15

ITEM

Presentation Of Waste Characterization Data And Its Potential For Identifying Opportunities For Additional Diversion

I. ISSUE/PROBLEM STATEMENT

A major tenet of the California Integrated Waste Management Board's (Board) stated mission is to reduce waste and promote the management of all materials to their highest and best use. To accomplish this, the Board has established a commitment to better understand California's complex waste stream by collecting, developing, maintaining, and publishing accurate, up-to-date waste stream data. Updated data on the waste stream is essential for solid waste planning and market development. Data on the types and amounts of materials remaining in the waste stream can be an important part of setting priorities and making future policy decisions to reduce waste. This is reflected in the Board's Strategic Plan Goal of collecting statewide waste characterization data at least every 4 years. The 2003 statewide waste characterization data provides updated waste stream data for use by local governments, businesses, a variety of interested parties and the Board. Collection of this data can save local government resources in that they can use Board derived data.

II. ITEM HISTORY

At its December 2004 meeting, Board staff presented a brief overview of the 2003 waste characterization data.

III. OPTIONS FOR THE BOARD

The Board is not required to take action on this discussion item.

IV. STAFF RECOMMENDATION

Staff has no recommendation as this is a discussion item.

V. ANALYSIS

A. Key Issues and Findings

A major tenet of the Board's stated mission is to reduce waste and promote the management of all materials to their highest and best use. To accomplish this, the Board has established a commitment to better understand California's complex waste stream by collecting, developing, maintaining, and publishing accurate, up-to-date waste stream information.

Background

The Integrated Waste Management Act (IWMA) required each jurisdiction to characterize the amounts and types of materials in its waste stream in 1990, and the information was to be used in selecting appropriate diversion and waste reduction activities. Data from all jurisdictions' 1990 studies was compiled and used by the Board throughout the 1990's as they considered a wide variety of policy decisions and determined where to focus Board resources.

Although several jurisdiction-specific disposal characterization studies have been performed in recent years, the first statewide disposal waste characterization data was

collected in 1999. Due to rapid changes in demographics and economics, it is apparent the State's waste stream has changed since then. More people and more businesses mean more waste which needs to be managed. Updated data on the waste stream is essential for solid waste planning and market development. This is reflected in the Board's Strategic Plan Goal of collecting statewide waste characterization data every 4 years. Local governments and businesses throughout California use this data as part of their decision making processes. Finally, more specific data concerning used oil containers, electronic waste (e-waste), and types of organics still being disposed is needed to fulfill both internal and external requirements.

Waste characterization data consists of information on the types and amounts of materials in the waste stream. It measures, for example, how much paper, glass, and metal are discarded by a home, a business, a city, or even the whole state. This data is important because in order to manage and reduce the waste stream, we must understand not only what is in it, but from where it came. The more we know about the waste stream, the better the opportunity to reach goals of conserving landfill space, resources, and money, and achieving zero waste.

Given the volatile, constantly changing economic forces that impact California's waste stream, the Board has periodically invested in collecting data on the types and amounts of materials left in the waste stream for use in assessing progress and establishing priorities.

The state's progress in waste reduction and recycling is sternly tested by a number of factors. One is California's economy, which affects the amount of waste generated and the sectors that are driving the economy – when the economy is growing, the amount of waste generated increases. Decreases in the manufacturing sector and increases in the construction sector will impact the types and amounts of waste present in the waste stream. Another factor is the cost of disposal relative to the cost of diversion. Landfill tipping fees in California are relatively low—averaging approximately $35 per ton in 2000. With such low costs, throwing materials away may be easier and more economical than collecting and diverting them. Additional factors are California's marketplace and collection of materials for that marketplace. There is often a disconnect between supply and demand of recycled materials. If a material is to be collected for recycling, viable markets must be present. If viable markets are to exist, a sufficient quantity and quality of recycled material must be available for purchase at a reasonable price. The costs of collecting, sorting, and marketing some materials generated in some California municipalities is not economical. Again, this often leaves a gap. As a result, some materials that are collected for recycling may end up in the landfill.

In an effort to promote local markets for additional materials being collected by local governments, the legislature enacted AB 1322 in 1989 which established the Recycling Market Development Zone (RMDZ) Program. This program has assisted over 650 recycling-based businesses that consume approximately 7.3 million tons of locally generated recyclables each year, including organics, C&D materials, and paper. The Board has also funded a conversion technology facility that is projected to divert 27,000 tons annually of mixed plastics.

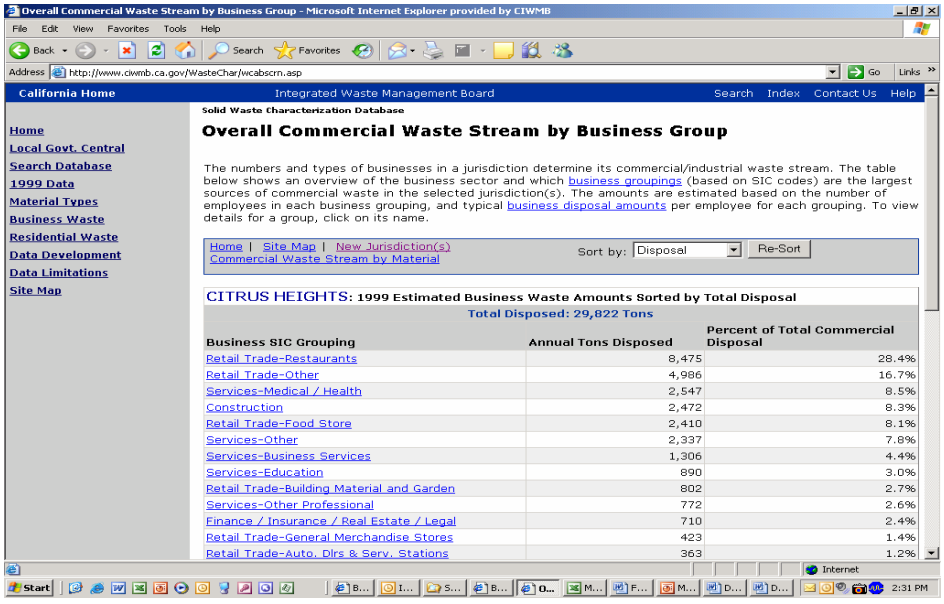
Waste Characterization Data

Waste characterization data can be used in many ways. For example, it can provide

information about the amount of materials potentially available for recycling or composting, the effectiveness of existing programs, and sources of materials. Some types of data can be used to estimate waste stream characteristics in place of sampling studies. For example, the Board's waste characterization database combines waste stream information for specific business types with local business sector data to provide proxy information on a city's commercial waste stream. This web-based database (http://www.ciwmb.ca.gov/WasteChar/JurisSel.asp) is one of the most popular sites on the Board's web page, receiving almost 400,000 external hits in 2004, and was one of the top 10 most popular Board sites for 5 months in 2004.

The importance of waste characterization data was recognized in AB 939, which required each jurisdiction in the state to conduct comprehensive "Solid Waste Generation Studies" (SWGS) on their own local waste streams. The SWGS assessed the local waste stream and provided a basis for local solid waste planning. At the time, no standard method existed and the quality of the SWGS varied widely. Most SWGS were done in 1990-1991, and since that time only a few jurisdictions (less than 10%) have done either comprehensive or targeted characterization studies to update their waste stream information. Many more jurisdictions have done "new base year studies" which quantify materials diverted and disposed, but usually do not include collecting data on the composition of materials still being disposed in the waste stream.

The Board developed a Uniform Waste Characterization Method in 1995 for jurisdictions to use in updating their waste stream data (http://www.ciwmb.ca.gov/WasteChar/YourData.htm). As part of the method development, a database was created that allows jurisdictions to estimate their own waste stream characteristics without expensive field sampling. This database is unique in the nation and is used by businesses, local governments, consultants, other states, and even other countries. When the Board determined to collect the first-ever statewide waste characterization data in 1999, one of the main emphases of the work was to collect generator-based data to update and expand the database. Recently the database has been used to estimate the waste stream characteristics of several newly-incorporated cities, saving them the resources and expense of doing disposal characterization field work or using outdated information from previous studies. Using the City of Citrus Heights, the following is an example of the type of information available to jurisdictions on the database.



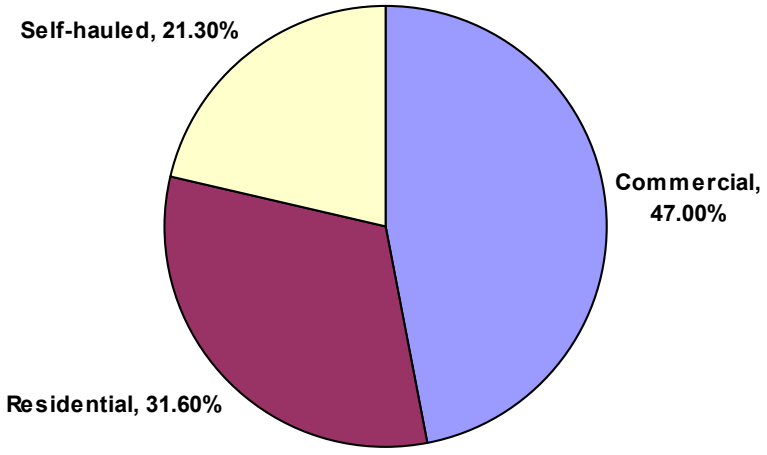
Data from California's 1999 project was used to update and expand the waste

characterization database. Data was also used to estimate amounts of organics and wood waste disposed in four southern California counties, in order to provide information for the Board's response to a proposed South Coast Air Quality Management District ruling on composting facilities. Data was also provided to the California Department of Food and Agriculture on amounts of greenwaste disposed in counties affected by Sudden Oak Death Syndrome. Waste composition information from 1999 was used to estimate feed stocks for conversion technology for the Board's report to the legislature. The 1999 Board characterization data was combined with data from a City of Los Angeles study to develop waste composition information for schools, which is on the Board's Schools Profiles web page. The specific data collected in 1999 on Rigid Plastic Packaging Containers (RPPCs) was used to determine the recycling rates of these materials, as mandated by statute.

The Board's 2001 Strategic Plan calls for statewide characterization data to be collected every 4 years. In May 2001 Board staff developed a budget change proposal (BCP) for $1.5 million to fund statewide waste characterization data collection similar to the 1999 work. Generator-based sampling was to be repeated and expanded to update the waste characterization database. This proposal was not approved for the 2002-2003 fiscal year. However, in November 2002 the Board approved $290,000 for statewide data collection, including specific data for RPPCs. The final report for this 2003 waste characterization data was completed in December 2004 (http://www.ciwmb.ca.gov/Publications/default.asp?pubid=1097).

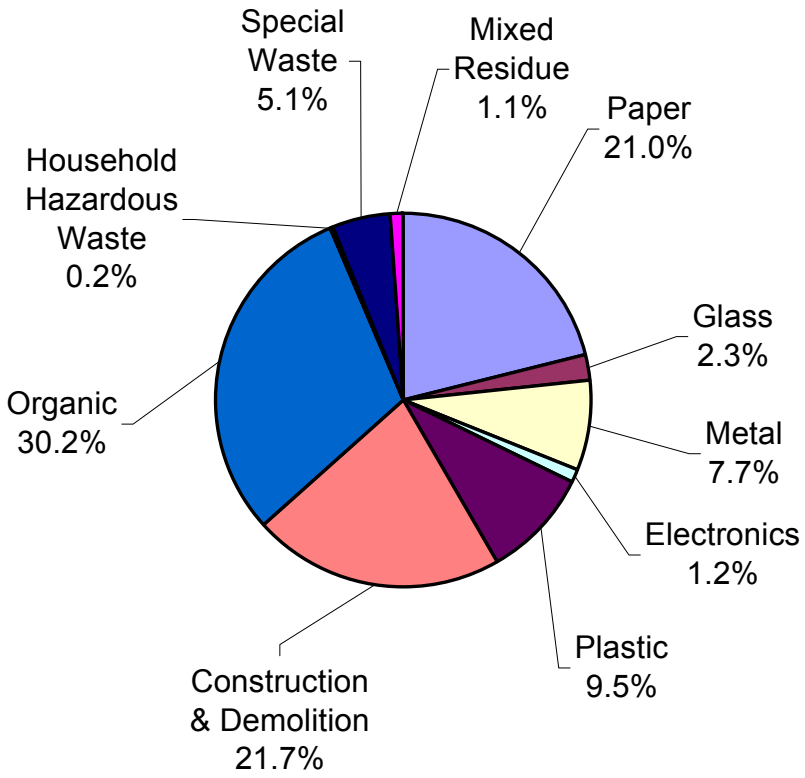
For the 2003 statewide waste characterization data, disposed waste was sorted into 67 different material types (See attachment 1). These material types fall into ten major categories: paper, glass, metal, e-waste, plastic, organics, construction and demolition, household hazardous waste, special waste and mixed residue.
The 2003 waste characterization data measured the amount of waste originating from residential, commercial, and self-haul sources, and also developed specific waste composition profiles for each of these sectors, as well as the overall statewide waste composition (see Attachment 2 for overall composition data). The amount of RPPCs disposed statewide was also determined. For the first time, data was collected specifically on electronic waste, specific types of film plastic, carpeting, and California Redemption Value (CRV) containers disposed. Results show that about half (47%) of the waste disposed originates from the commercial sector, about 32% comes from residential sources, and the remaining 21% comes from self-haul sources.

Contribution of Each Sector to Statewide Overall Disposed Waste Stream, 2003



The three main material categories disposed are organics (including food) at 30%, construction and demolition materials (including lumber and pallets) at 22%, and paper at about 21%.

Composition of Overall Disposed Waste Stream by Major Category, 2003



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The top 10 individual material types disposed are as follows:

Ten Most Prevalent Material Types in California's Overall Disposed Waste System, 2003

Material Type	Est. Pct.	Est. Tons	Cumulative Pct.
Food	14.6%	5,854,352	14.6%
Lumber	9.6%	3,881,214	24.2%
Uncoated Corrugated Cardboard	5.7%	2,312,147	29.9%
Remainder/Composite Paper	5.7%	2,274,433	35.6%
Remainder/Composite Organics	4.4%	1,752,803	40.0%
Leaves and Grass	4.2%	1,696,022	44.2%
Remainder/Composite Construction & Demolition	3.6%	1,452,009	47.8%
Other Miscellaneous Paper	3.5%	1,400,526	51.3%
Bulky Items	3.4%	1,348,224	54.6%
Remainder/Composite Metal	2.5%	1,018,242	57.1%

Any differences between *cumulative percent* figures and the sum of *estimated percent* figures are due to rounding. *Note: *Remainder/composite paper* includes such items as waxed corrugated cardboard, aseptic packages, paper towels, and photographs. Examples of *remainder/composite organics* include leather items, cork, garden hoses, carpet padding, and diapers. The material type *remainder/composite construction and demolition* includes such items as tiles, toilets, and fiberglass insulation. *Remainder/composite metal* includes such items as small non-electronic appliances, motors, and insulated wire.

When comparing the 2003 statewide data to the 1999 data, there are some key points that must be kept in mind. The first is the difference in objectives and methodology. The 1999 characterization work focused on developing waste composition data for 26 specific business types through generator sampling; that is, collecting a sample of a particular

business' waste from their dumpster. This method requires samples to be characterized from specific types of businesses. The 2003 characterization work, due to budget constraints, focused not on generator sampling at individual businesses, but on what types and amounts of materials were sent to landfills from the overall commercial sector. Commercial waste was sampled from commercial packer trucks at disposal facilities. The residential and self-hauled sectors, however, had designs similar to 1999.

A second point to remember is the inherent variability of random sampling. When data sampling is planned, a random set of facilities is chosen for the purpose of providing disposal quantity data through surveys, and composition data through samples. Since the sector (residential, commercial, self-hauled) percents are so variable from place to place and changes over time, the exact set of facilities used for sampling determines the sector percents that result for the overall data. If, for example, the set randomly chosen tends to have lower self-hauled waste disposed at the facilities, the overall data will show a lower sector percent for self-hauled. There are changes in facilities over time: landfills and transfer stations open, close, or change how they deal with waste materials. Because of changes, and the need to randomly select facilities, a different set of facilities has been used each time the Board has gathered characterization data. Additionally, it should be noted that the waste stream itself varies greatly from place to place, as well as over time.

Keeping those key points in mind, the top 10 material types in the overall waste stream stayed about the same between 1999 and 2003. Food is still the most prevalent material type, at about 15% of the waste stream. The following table shows the top ten materials in 2003, and their rankings within the top ten in 1999.

Comparison of Top Ten Materials in the Overall Waste Stream, 2003 and 1999

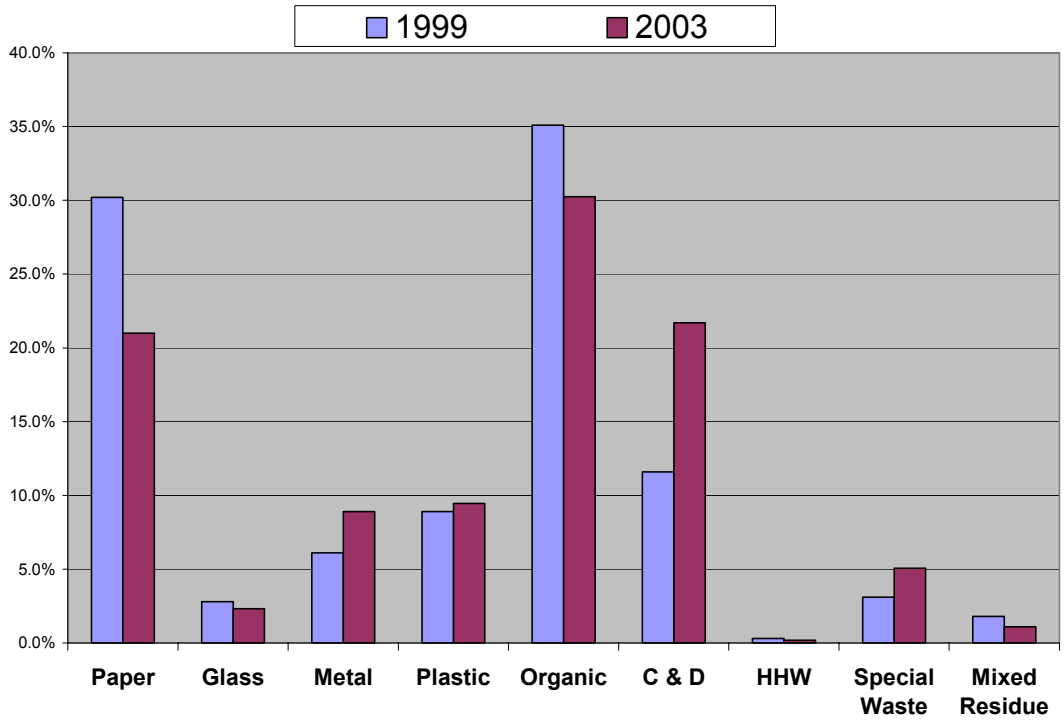
Material Type	Rank, 2003	Percent, 2003	Rank, 1999	Percent, 1999
Food	1	14.6%	1	15.7%
Lumber	2	9.6%	5	4.9%
Remainder/Composite Organics	3	6.4%	4	6.9%
Uncoated Corrugated Cardboard	4	5.7%	6	4.6%
Remainder/Composite Paper	5	5.7%	2	9.6%
Film Plastic	6	4.3%	9	3.9%
Leaves and Grass	7	4.2%	3	7.9%
Remainder/Composite Metal	8	3.7%	---	---
Remainder/Composite Construction & Demo.	9	3.6%	---	---
Other Miscellaneous Paper	10	3.5%	7	4.4%
Newspaper	---	---	8	4.3
Other Ferrous Metal	---	---	10	2.4

Note: some material types for 2003 were lumped to match 1999 types, like film plastic.

It is interesting to note that eight of the top ten disposed material types remained the same for the two studies. Though they may have different percentages and rankings, they are still the most disposed materials in the waste stream.

The overall statewide composition is calculated by combining the sector compositions, and each sector composition is weighted according to how much it contributes to overall statewide tonnage. Therefore, changes in sector compositions will be reflected in the overall composition. The figure below shows a comparison of the major material categories for the 1999 and the 2003 waste characterization data.

Comparison of Major Material Categories, 1999 and 2003



Below are highlights for selected material types that showed changes between the two studies:

- Paper – decreased substantially from about 30% to about 21%. Part of the decrease may be due to the change in the commercial sector composition which included more drop-box samples in 2003, which tend to be lower in paper. All material types showed a decrease except for cardboard and paper bags, two readily recyclable materials.
- Metal – increased from about 6% to about 9%. All material percentages in this group stayed the same or decreased except for "major appliances" and "remainder/composite metal", and both of these types showed substantial increases. Again, this may be partly due to increases in these types in the commercial sector from sampling drop boxes.
    - Note: in the 1999 waste characterization data, electronics (e-waste) were included under "remainder/composite metal." In 2003 for the first time, these materials were characterized as a separate type. For comparison with 1999 data, in the tables they were lumped back under "remainder/composite metal." Of the 3.7% of "remainder/composite metal" reported for 2003 in the Top Ten Table, about a third consists of e-waste (1.2% of the overall waste stream).
- Plastic – increased from just under 9% to about 9.5%. Most types decreased or stayed the same, except for film plastic and "remainder/composite plastic", both of which increased.
- Organics – decreased from about 35% to about 30%. Food is still the most prevalent material in this group, although it decreased slightly in the overall waste stream. The largest decrease occurred in the leaves/grass material type, from about 8% to about 4%
- Construction and Demolition – increased significantly from about 12% to about 22%. Again, part of the increase may be due to the change in the commercial sector composition which included more drop-box samples in 2003. Also, since the self-hauled sector percent was higher in 2003, it carried more weight in the overall composition compared to 1999. Since this sector is more than 50% C&D materials, part of the increase in 2003 may be due to the greater weighting of these materials in the overall waste stream.

The residential sector, which was sampled with the same method in the two studies, also showed an increase in C&D materials. This indicates a true and substantial increase in C&D materials in at least this one sector. Other data shows that statewide construction activity increased between 1999 and 2003; therefore it would be expected that C&D materials would increase in the overall waste stream. However, the increase may not be as large as the data suggests, due to differences in methodology for the 2 studies as well as sampling variability, as discussed above.

- Special Waste – increased from about 5% to about 6%, with all materials in this group staying at about the same percentage of the waste stream except for bulky items (furniture, mattresses, and other large items), which increased from about 2% to about 3% This is driven largely by the increase in bulky items in the self-hauled waste stream.

Though California has accomplished a lot since the passage of AB 939, the 2003 waste characterization data shows there is the potential to accomplish a lot more. The 2003 waste characterization data would indicate that there is still much material sent to disposal that could be reduced or otherwise diverted. The 2003 data shows that about 20 percent of California's disposed waste stream is *recyclable*, almost 25 percent is *compostable*, and about 16 percent is *recoverable* construction and demolition material. This overall potential for diversion, however, is predicated on overall material quality and market demand.

What Materials Are Recyclable?

Cardboard and kraft papers	6.7%
Other recyclable papers	5.2%
Recyclable glass	1.6%
Recyclable metals	5.2%
HDPE & PETE plastic and some film plastic	1.4%
Total recyclable	**20.1%**

What Materials Are Compostable?

Food	14.6%
Leaves & grass	4.2%
Other kinds of yard waste	2.6%
A portion of non-recyclable paper	About 3%
Total compostable	**About 24.4%**

How much of disposed waste is recoverable C&D material?

Concrete	2.4%
Lumber	9.6%
Gypsum board	1.7%
Rock, soil & fines	2.4%
Total recoverable C&D	**16.1%**

B. Environmental Issues

Staff is not aware of CEQA or cross media issues related to this agenda item.

C. Program/Long Term Impacts

Historically waste characterization data has been the cornerstone of local government's and the Board's efforts to target diversion efforts. Included below are brief discussions of some of the primary areas where the Board has used characterization data to focus its diversion efforts. Many Board policy decisions are based in part on characterization data.

Organics

Waste characterization data, along with other data, guides resource targeting for the organics program and has led to increased focus on organics over time. With organics being over 30% of the materials disposed of in California, the waste characterization data showed the need to manage organic or green materials besides their being extremely significant to achieving the waste diversion goals of the Board. The blueprint for the Board's initial organics program (The Greening Team) was developed using characterization data, targeting those material types that were still going into the landfill. Because of this designation as a priority material, the organics program was initially provided significant funding to develop research data on the beneficial uses of organic materials and other markets development related activities, create partnerships with local government, and other initiatives to stave off threats to the organics industry (i.e. Sudden Oak Death Disease and clopyralid). Some of the successes stemming from these efforts include: Landscape Management Outreach Programs (including the North Natomas effort), the Assessment of the Organics Infrastructure, and the agricultural demonstration projects. Although the funding has not been sustained, these efforts have been beneficial to promoting waste prevention and sustainable landscaping practices, supporting the development of the organics management industry, promoting use of organic materials in agricultural applications, and showing the cross media benefits of these applications.

Over time, waste stream information is also used to determine the effectiveness of the programs, and if changes are needed in focus of the programs. An example is the use of 1999 data regarding urban derived organics. 1999 data showed significant amounts of landscaping waste and food scraps being produced and disposed. This information guides many of the activities of the organics program to focus on these waste types and sectors generating these materials. There are also larger issues and forces that affect the overall organics market that must be investigated. Waste characterization data helps in the tracking of issues such as alternative daily cover (ADC), and the effect that tipping fees may have on specific material types entering landfills.

Waste characterization data is an important tool as a check and balance on facility capacity issues or trends. For example, if materials such as biosolids or manure start showing up in the waste characterization data as being landfilled, there would have to be additional efforts to reverse these trends. This information is also used for ongoing targeting of organic materials in the waste stream and development of program goals. This data has also increased the usefulness of the organics "Infrastructure" study in helping to interpreting markets trends and dealing with regulatory issues, by providing “real world” information. In working with other regulations promulgated by other regulatory agencies, this information has been invaluable in helping protect the organics industry and infrastructure from restrictive regulations. An example of this is the development of South Coast Air Quality Management District (SCAQMD) Rule 1133 regulating air emissions from composting and mulch facilities.
Other future concerns, such as the development of conversion technology (CT) facilities and their effect on the waste stream in California, will be aided by waste characterization data. Specific information like the fate of residuals (some green waste, non recyclable plastics and paper) coming off materials recovery facilities (MRF's) are of interest to the organics program and outside constituents. Also, the amounts of materials such as plastic and paper in the disposal stream may play a critical role in whether these technologies are sited in California.

Construction and Demolition Waste

Statewide waste characterization data has been crucial to targeting construction and demolition (C&D) program efforts, as C&D has continued to be a larger part of the waste stream than previously thought. Based on the 1999 characterization data, C&D materials were considered a primary diversion target because of their heavy weight and prevalence in the waste stream. Understanding the components of the C&D waste stream will help the Board to evaluate existing programs and determine if additional programs are needed to effectively target C&D materials.

Realizing the critical importance of good building design, construction techniques, and demolition practices to the goals of reducing waste and developing markets for recycled-content products, the Board created a Sustainable Building program in 1999 with the adoption of the *Sustainable Building Implementation Plan*.

Support for the Board's sustainable buildings activities came out of State Executive Orders D-16-00 and S-20-04. The first Executive Order, signed by Governor Gray Davis in 2000, established a goal to site, design, deconstruct, construct, renovate, operate, and maintain state buildings in a sustainable manner. Governor Schwarzenegger signed the latter Executive Order in 2004 to ensure that state buildings are built to the standard of Leadership in Energy and Environmental Design (LEED).

In 2002, SB1374 was passed which required the Board to develop a model C&D diversion ordinance for local jurisdictions to use to create ordinances to meet their local needs. A website provides this model ordinance as well as sample ordinances from jurisdictions that have already adopted a C&D ordinance.

Statewide, California can be proud of some recent achievements in C&D diversion. In 2002, State construction projects under the Department of General Services achieved an average diversion/recycle rate of 95%. In 2003, the diversion rate was 94%. Highlights include the Franchise Tax Board offices at Butterfield Station, which during the site work stage of construction diverted or recycled almost 22,000 tons of C&D debris for a total diversion rate of 99.6%. The East End Project did nearly as well by diverting or recycling almost 18,000 tons of debris, achieving a diversion rate of 91%. Finally, the CalTrans District 7 offices diverted or recycled almost 12,000 tons of debris for a total diversion rate of 94%.

The economics of both construction recycling and deconstruction is tied to the economics of C&D processing, which also faces challenges. In addition, because landfilling is the more accepted practice, the C&D waste stream going to C&D processors can be unreliable. C&D processors require a reliable waste stream and reliable markets for the processed materials; manufacturers of recycling content products (RCPs) require a reliable feedstock supply; developers require the availability of cost-competitive deconstruction contractors; and construction and deconstruction contractors require the availability of cost-competitive C&D processors.
The new realm of the Board's sustainable building program is the residential sector and the associated huge diversion potential.

Plastics

To increase the recycling rate for plastic materials, waste characterization studies will continue to be necessary to identify changes in the amount and composition of plastic

discards in the waste stream. Increasing plastic diversion is a prerequisite if the Board is to realize its zero waste vision for California. Waste characterization data has played a key role in developing and implementing plastic diversion programs. Until the 2004 changes to the law, the Board used waste characterization data to annually publish recycling rates for all Rigid Plastic Packaging Containers (RPPC) and for PET containers.

Additionally, the most recent waste characterization data provided detailed information on film plastic by categorizing specific film types that are disposed of in California. This information is instrumental to the stakeholder process the Board is now engaged in to develop a more comprehensive solution, beyond the Plastic Trash Bag Law, to plastic film diversion in California.

The 2003 waste characterization data shows that plastic materials now constitute 9.5 percent of the disposed waste stream, up from 8.9 percent in 1999. However, because of its low weight to volume ratio, it is estimated that plastic doubles its contribution to the waste stream when measured by volume. Using the current data, plastic may account for almost 20 percent of the disposed waste stream by volume. In addition, the overall recycling rate for plastics remains low, about 5 percent (U.S. EPA, 2000). As other materials are diverted in greater amounts and products and packaging are switched to plastic from other materials, the plastic fraction of waste will only increase in relative proportion over time.

A significant amount of recovered plastics are shipped out of the country. It is difficult to get manufacturers in other countries to report the amount of post-consumer material in their products.

The main issues, sited by a variety of stakeholders, with both of the Rigid Plastic Packaging Container and Plastic Trash Bag laws is that they do not achieve a significant amount of plastic diversion, and that their mandatory minimum content requirements may not be the best mechanism for diverting plastic materials from landfilling. The recommendations from the Plastics White Paper adopted by the Board at its June 2003 meeting drew these same conclusions. Board staff has engaged stakeholders to develop draft recommendations to possibly suspend the Plastic Trash Bag law and instead negotiate MOUs with key industry segments to implement programs and actions that will significantly increase plastic film diversion in California.

New and expanded collection and processing infrastructure to increase plastic diversion is necessary. The existing infrastructure is not nearly adequate for achieving any significant increase in plastic diversion. Waste characterization data will be needed to make informed decisions about the mix of collection, processing programs that are needed, and also for identifying what end use applications should be supported given the material that is in the waste stream.

Also, if the Board adopts the proposed recommendations in the draft Plastic Trash Bag Legislative report, and should the necessary legislation be enacted, then staff will need to negotiate Memoranda of Understanding (MOUs) with key industry, local government and environmental stakeholders. These MOUs will set forth diversion goals and projects for specified types of plastic film. The current waste characterization data would serve as a benchmark from which to measure progress. This makes collecting waste characterization data in four years an absolute necessity if the proposed new,

more comprehensive approach, for plastic film management is to be implemented. Without a commitment to collect waste characterization data in the future, the whole framework that staff has been negotiating over the last 5 months collapses.

Paper

In 2003, California's overall disposed waste stream was comprised of 21 percent paper. While some of the Board's paper related programs have been statutorily directed, the waste characterization data has historically been used to ensure a proper focus of resources on program areas. Furthermore, it has been used to refine those efforts to target specific industry sectors that stand out as large generators of materials or consumers of products. Regular waste characterization updates at more frequent intervals would continue to help us ensure that we are focusing our efforts on the appropriate materials and generators.

Paper markets are more national and international than limited to California, so the Board has participated in broader efforts to divert paper from landfills. The Board served on the board of the Recycled Paper Coalition (RPC) for almost ten years. The RPC, which was initiated by the private sector, was comprised of 280 members from businesses, non-profits, and public organizations that sought to encourage paper recycling and stimulate demand for recycled paper products made from postconsumer materials**.** The coalition was disbanded in 2004 due to lack of financial support, although the members still strongly support working to increase use of recycled paper.

Staff from throughout the Board has also been involved to varying degrees with all aspects of the paper recycling loop. Typically the topic has been approached from either the diversion, collection, raw material side, or the finished recycled-content paper side.

On the finished product side, demand for recycled content paper still lags. Despite many consumers using 10 percent postconsumer paper, and some consumers using 30 percent postconsumer paper, very little demand exists for the higher content papers. Even more importantly, not enough consumers are demanding the papers with lower postconsumer content. One issue at work is the typically smaller/older/least efficient paper mills are the ones making the recycled-content papers. Also, very little paper production exists in the Western United States.

In addition, there is a potential for some conversion technologies to use contaminated or otherwise unrecoverable paper or paper products for feedstock.

Special Waste

Currently, the Tire Program uses survey data and other sources to determine the number of tires generated, diverted, and disposed. Additionally, there are other sources of data such as from the Manifest System, the California Board of Equalization, and the Diversion, Planning, and Local Assistance Division's (DPLA) Waste Characterization data that can be used to examine the effectiveness of the program. While these other programs collect data in different ways and may not relate exactly to the performance measures being evaluated in the Tire Program, understanding how these data sets relate and how they might be modified to complement the Tire Program's performances measures is worth investigating further. For instance, the 1999 Waste Characterization data included data on waste tires; however, it included bicycle tires and motorcycle tires that are not included in

the Board's Tire Program. Furthermore, many waste characterization samples weighed only 200 pounds or less and a large truck tire (weighing 120-150 pounds) would skew the results for that particular sample. As a result, the waste characterization data cannot be compared effectively to the Tire Program's other data sources. If the upcoming Waste Characterization data collection effort could establish a protocol that would effectively mesh with the data already collected by the Tire Program, the two data sets could then be used to augment and verify the accuracy of existing data sets. This would be a good example of the Board's diverse programs effectively leveraging existing resources to support common goals.

In the past, Do-It-Yourselfers (DIYers) oil changers dumped their used oil in garbage cans which ended up in landfills, down storm drains or empty fields. Then, the Used Oil Program came about (in 1991) to educate individuals on proper disposal and to provide avenues for the DIYers oil changers to recycle their used oil. Consequently, a very small percentage of samples, less than 1 percent, were found to be contaminated with a low level of oil. While the positive impact of the Used Oil Program has almost eliminated illegal disposal at landfill, statistic shows that not all used oil is recycled. Illegal disposal of used oil continues to take place, especially among new immigrants who are unaware of the damage it can cause to the environment or the infrastructure that is in place for the disposal of used oil.

D. Stakeholder Impacts

The waste characterization data is widely used by stakeholders in California, nationally and internationally. The waste characterization database on the Board's web site had over 400,000 external hits from January to November of 2004. Many stakeholders use waste characterization data when participating in Board discussions of potential programs and priorities for the material types discussed above. Many businesses turn to the waste characterization database to identify typical waste types and amounts for their type of business and identify the potential for waste prevention or other diversion activities. Other agencies use characterization data. For example, characterization data was used to estimate amounts of organics and wood waste disposed in four southern California counties, to provide information for the Board's response to a proposed South Coast Air Quality Management District ruling on composting facilities. Data was also provided to the California Department of Food and Agriculture on amounts of greenwaste disposed in counties affected by Sudden Oak Death Syndrome.

E. Fiscal Impacts

No fiscal impact to the Board results from this agenda item.

F. Legal Issues

Based on available information, staff is not aware of any legal issues related to this agenda item.

G. Environmental Justice

Based on available information, staff is not aware of any environmental justice issues related to this agenda item.

H. 2001 Strategic Plan

Waste characterization work supports the Board's Strategic Plan as follows:

Goal 1: Increase participation in resource conservation, integrated waste management, product stewardship waste prevention to reduce waste and create a sustainable infrastructure:

- ***Objective 1*:** Promote environmentally sound and financially viable waste prevention and materials management practices among all actors in the life cycle of products and services.
  - ***Strategy E.*** Promote self-assessment by businesses and households of their waste prevention practices.

Goal 2: Assist in the creation and expansion of sustainable markets to support diversion efforts and ensure that diverted materials return to the economic mainstream.

- ***Objective 3:*** Support local jurisdictions' ability to reach and maintain California's waste diversion mandates.
  - ***Strategy E***: Provide assistance and education to local governments, businesses, schools, and State facilities to implement and assess programs.
  - ***Strategy F***: Support local government efforts to use alternative means of diverting waste, including the use of conversion technology where residuals can be converted directly into electricity and actively managed to increase fuel and gas production.

Goal 7: Promote a "zero-waste California" where the public, industry, and government strive to reduce, reuse, or recycle all municipal solid waste materials back into nature or the marketplace in a manner that protects human health and the environment and honors the principles of California's Integrated Waste Management Act.

- ***Objective 4:*** Promote new or existing technologies and processes to address existing or emerging waste streams.
  - ***Strategy C:*** Develop Board priority areas relative to material types and business outputs.

VI. FUNDING INFORMATION

This item does not require any Board fiscal action.

VII. ATTACHMENTS

1. 2003 Waste Characterization Material Categories
2. Composition of California's Overall Disposed Waste Stream by Material Type, 2003

VIII. STAFF RESPONSIBLE FOR ITEM PREPARATION

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C. Administration Staff: N/A **Phone:** N/A

IX. WRITTEN SUPPORT AND/OR OPPOSITION

A. Support

Staff had not received any written support at the time this item was submitted for publication.

B. Opposition

Staff had not received any written opposition at the time this item was submitted for publication.

2003 Waste Characterization Material Categories and Material Types Used for Sorting the Disposed Wastestream

The information below is organized by:
Material Category
Material Type

Paper
- Uncoated Corrugated Cardboard
- Paper Bags
- Newspaper
- White Ledger
- Colored Ledger
- Computer Paper
- Other Office Paper
- Magazines and Catalogs
- Phone Books and Directories
- Other Miscellaneous Paper
- Remainder/Composite Paper

Glass
- Clear Glass Bottles and Containers
- Green Glass Bottles and Containers
- Brown Glass Bottles and Containers
- Other Colored Glass Bottles and Containers
- Flat Glass
- Remainder/Composite Glass

Metal
- Tin/Steel Cans
- Major Appliances
- Other Ferrous
- Used Oil Filters*
- Aluminum Cans
- Other Non-Ferrous
- Remainder/Composite Metal

***NOTE**: This type was previously classified under "Other Ferrous".

E-waste *
- Brown Goods
- Computer-related Electronics
- Other Small Consumer Electronics
- Televisions and Other Items with CRTs

***NOTE**: These types were previously classified under "Remainder/Composite Metal".

Plastic
- PETE Containers
- HDPE Containers
- Miscellaneous Plastic Containers
- Plastic Trash Bags *
- Plastic Grocery and Other Merchandise Bags *
- Non-Bag Commercial and Industrial Packaging Film *
- Film Products *

Other Film*
Durable Plastic Items
Remainder/Composite Plastic

***NOTE**: These types were previously classified under the more general type "Film Plastic".

Organic

Food
Leaves and Grass
Prunings and Trimmings
Branches and Stumps
Agricultural Crop Residues
Manures
Textiles
Carpet *
Remainder/Composite Organic

***NOTE**: Previously classified under "Remainder/Composite Organic".

Construction and Demolition

Concrete
Asphalt Paving
Asphalt Roofing
Lumber
Gypsum Board
Rock, Soil, and Fines
Remainder/Composite Construction and Demolition

Household Hazardous Waste

Paint
Vehicle and Equipment Fluids
Used Oil
Batteries
Remainder/Composite Household Hazardous

Special Waste

Ash
Sewage Solids
Industrial Sludge
Treated Medical Waste
Bulky Items
Tires
Remainder/Composite Waste

Mixed Residue

Mixed Residue

Composition of California's Overall Disposed Waste Stream by Material Type, 2003

	Est. Pct.	+ / -	Est. Tons
Paper	**21.0%**		**8,445,989**
Uncoated Corrugated Cardboard	5.7%	1.2%	2,312,147
Paper Bags	1.0%	0.5%	386,097
Newspaper	2.2%	0.4%	887,091
White Ledger	1.1%	0.3%	447,516
Colored Ledger	0.1%	0.0%	20,583
Computer Paper	0.1%	0.0%	20,845
Other Office Paper	0.7%	0.2%	296,203
Magazines and Catalogs	0.8%	0.2%	311,143
Phone Books and Directories	0.2%	0.1%	89,403
Other Miscellaneous Paper	3.5%	0.6%	1,400,526
Remainder/Composite Paper	5.7%	0.7%	2,274,433
Glass	**2.3%**		**934,926**
Clear Glass Bottles and Containers	0.9%	0.1%	356,467
Green Glass Bottles and Containers	0.4%	0.1%	180,570
Brown Glass Bottles and Containers	0.3%	0.0%	104,568
Other Colored Glass Bottles and Containers	0.0%	0.0%	3,106
Flat Glass	0.4%	0.4%	151,344
Remainder/Composite Glass	0.3%	0.1%	138,870
Metal	**7.7%**		**3,115,357**
Tin/Steel Cans	0.8%	0.2%	323,540
Major Appliances	1.5%	2.1%	616,663
Used Oil Filters	0.0%	0.0%	1,376
Other Ferrous	2.4%	0.5%	969,676
Aluminum Cans	0.2%	0.0%	74,851
Other Non-Ferrous	0.3%	0.1%	111,008
Remainder/Composite Metal	2.5%	0.6%	1,018,242
Electronics	**1.2%**		**481,353**
Brown Goods	0.1%	0.0%	41,394
Computer-related Electronics	0.3%	0.2%	119,917
Other Small Consumer Electronics	0.2%	0.1%	93,273
Television and Other Items with CRTs	0.6%	0.5%	226,769
Plastic	**9.5%**		**3,809,699**
PETE Containers	0.5%	0.1%	216,134
HDPE Containers	0.5%	0.1%	189,549
Miscellaneous Plastic Containers	0.5%	0.1%	206,470
Plastic Trash Bags	1.0%	0.2%	390,460
Plastic Grocery and Other Merchandise Bags	0.4%	0.0%	147,038
Non-Bag Commercial and Industrial Packaging Film	0.7%	0.3%	290,331
Film Products	0.2%	0.2%	93,073
Other Film	2.1%	0.6%	826,757
Durable Plastic Items	1.4%	0.2%	561,543
Remainder/Composite Plastic	2.2%	0.3%	888,343

	Est. Pct.	+ / -	Est. Tons
Organic	**30.2%**		**12,166,452**
Food	14.6%	2.6%	5,854,352
Leaves and Grass	4.2%	1.0%	1,696,022
Prunings and Trimmings	2.3%	0.6%	920,356
Branches and Stumps	0.3%	0.2%	119,754
Agricultural Crop Residues	0.0%	0.0%	0
Manures	0.1%	0.0%	36,506
Textiles	2.4%	1.3%	947,789
Carpet	2.1%	0.7%	838,869
Remainder/Composite Organics	4.4%	0.8%	1,752,803
Construction & Demolition	**21.7%**		**8,732,074**
Concrete	2.4%	0.9%	966,607
Asphalt Paving	0.0%	0.0%	10,414
Asphalt Roofing	1.9%	1.0%	767,981
Lumber	9.6%	1.4%	3,881,214
Gypsum Board	1.7%	0.8%	676,430
Rock, Soil, and Fines	2.4%	1.0%	977,419
Remainder/Composite Construction and Demolition	3.6%	0.8%	1,452,009
Household Hazardous Waste	**0.2%**		**73,599**
Paint	0.0%	0.0%	19,203
Vehicle and Equipment Fluids	0.0%	0.0%	1,000
Used Oil	0.0%	0.0%	548
Batteries	0.1%	0.0%	34,021
Remainder/Composite Household Hazardous	0.0%	0.0%	18,827
Special Waste	**5.1%**		**2,038,431**
Ash	0.1%	0.1%	60,160
Sewage Solids	0.0%	0.0%	0
Industrial Sludge	0.0%	0.0%	0
Treated Medical Waste	0.0%	0.0%	15,367
Bulky Items	3.4%	1.2%	1,348,224
Tires	0.3%	0.2%	126,633
Remainder/Composite Special Waste	1.2%	1.6%	488,047
Mixed Residue	**1.1%**	0.3%	**437,448**
Totals	**100.0%**		**40,235,328**
Sample count:	**550**		

Confidence intervals calculated at the 90% confidence level. Percentages for material types may not total 100% due to rounding.